



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
|-----------------|-------------|----------------------|---------------------|------------------|

10/567,112

03/06/2007

Thomas Dobbertin

03100277AA

2907

30743

7590

11/10/2009

WHITHAM, CURTIS & CHRISTOFFERSON & COOK, P.C.

11491 SUNSET HILLS ROAD

SUITE 340

RESTON, VA 20190

EXAMINER

CLARK, GREGORY D

ART UNIT

PAPER NUMBER

1794

MAIL DATE

DELIVERY MODE

11/10/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/567,112 | DOBBERTIN ET AL. | |
| | Examiner | Art Unit | |
| | GREGORY CLARK | 1794 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>02/03/2006, 05/12/2006</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Regarding Claims 1-4, the claimed invention as written represent use claims and thus attempts to claim a process without setting forth any steps involved in the process which raises an issue of indefiniteness.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. Regarding Claims 1-4, the claimed invention as written represent “use claims” and is thus directed to non-statutory subject matter.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 1794

4. Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mori (US 5,281, 489).

5. Regarding Claim 1, Mori discloses an electroluminescent element that includes a hole injection layer (hole moving and donating) that contains a metal or non-metalphthalocyanine (column 4, lines 61-62).

Also since the Mori suggests the use of phthalocyanine and the most basic structure would have hydrogen substitution, it would have been obvious to have used has H as the radical groups as claimed.

In addition, a metal or non-metalphthalocyanine based on the hydrocarbon character would be hydrophobic.

Likewise, a film formed from a metal or non-metalphthalocyanine would cover the surface to which it is applied and be considered as an encapsulation layer.

6. Regarding Claim 2, Mori discloses that the hole injecting layer (hole moving and donating) can contain a metal or non-metalphthalocyanine (column 4, lines 61-62). Mori discloses that the hole injecting layer (hole moving and donating) can also contain an anthracene compound (column 4, line 41). Mori further discloses that the hole injection layer (hole moving and donating) can contain a single material or a combination of materials (column 7, lines 67-68).

Since Mori discloses the hole injection layer can have a combination of materials than includes a metal or non-metalphthalocyanine and an anthracene compound, it

Art Unit: 1794

would have been obvious to a person of ordinary skill in the art to have included metal or non-metalphthalocyanine along with an anthracene compound in the hole injecting layer as claimed.

Also since the Mori suggests the use of phthalocyanine and the most basic structure would have hydrogen substitution, it would have been obvious to have used has H as the radical groups as claimed.

7. **Regarding Claims 3 and 4**, Mori discloses a metal or non-metalphthalocyanine (a type of porphyrin structure) (column 4, lines 61-62) that reads on the Formula(s) of claims 3 and 4.

The applicant claims a number of different metals: Cu, Zn, Fe, Mn, Co, or Ni: The examiner takes the position that it is common in the art to use a host of metals of these types especially copper and iron in porphyrin ring structures. Copper is used in hemocyanin and iron is used in hemoglobin, which are both porphyrin structures of this basic structure.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have looked to common metal / porphyrin structures to determine what types of metals would be useful for the generic metal disclosed in Mori. This would include Fe and Cu as claimed

Also since the Mori suggests the use of phthalocyanine and the most basic structure would have hydrogen substitution, it would have been obvious to have used has H as the radical groups as claimed.

8. **Regarding Claims 5 and 8-9**, Mori discloses an electroluminescent element, containing a hole moving/donating agent corresponding to the applicants' hole-injecting/hole-transporting zone, a electron moving/donating agent corresponding to the applicants' electron-injecting/electron-transporting zone (abstract). Mori also mentions that the electroluminescent element has an anode (column 28, lines 47-48) formed on a support (substrate) and a cathode (column 30, line 57).

Mori discloses that the hole injecting layer (hole moving and donating) can contain a metal or non-metalphthalocyanine (column 4, lines 61-62) (per claims 5 and 8-9).

The applicant claims a number of different metals: Cu, Zn, Fe, Mn, Co, or Ni: The examiner takes the position that it is common in the art to use a host of metals of these types especially copper and iron in porphyrin ring structures. Copper is used in hemocyanin and iron is used in hemoglobin which are both porphyrin structures of this basic structure.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have looked to common metal / porphyrin structures to determine what types of metals would be useful for the generic metal disclosed in Mori. This would include Fe and Cu as claimed

Also since the Mori suggests the use of phthalocyanine and the most basic structure would have hydrogen substitution, it would have been obvious to have used has H as the radical groups as claimed.

In addition, a film formed from a metal or non-metalphthalocyanine would cover the surface to which it is applied and be considered as an encapsulation layer.

9. **Regarding Claims 6-7, 11 and 13**, Mori discloses an electroluminescent element, containing a hole moving/donating agent corresponding to the applicants' hole-injecting/hole-transporting zone, a electron moving/donating agent corresponding to the applicants' electron-injecting/electron-transporting zone (abstract). Mori also mentions that the electroluminescent element has an anode (column 28, lines 47-48) formed on a support (substrate) and a cathode (column 30, line 57). Mori fails to mention that the electron-injecting/electron-transporting zone is adjoined toward the anode.

Since it is commonly known in the electroluminescent art that the anode injects holes into the adjacent organic layer and the cathode inject electrons into the adjacent organic layer, the routine optimization of the device efficiency especially in terms of lower the driving/running voltage requirements and optimizing the luminescence output is often achieved by testing the device performance under various organic layer configurations which would include the claimed layer configuration.

The examiner takes the position that it is common in the art to arrange layers in different configurations to achieve the desired device function whether to improve luminescent output or the lowering of drive/running voltage. Such routine variations would have included the electron-injecting/electron-transporting zone adjoined toward the anode.

Mori discloses that the electron injecting/transporting agent can be made from low molecular weight polycyclic aromatics with linear chains such as anthracene, tetracene, pentacene (column 8, line 49) (per claim 11). Mori also discloses that the electron injecting/transporting agent can be made from a metal or non-metal phthalocyanine (column 8, line 26) (per claims 12 and 13).

Also since the Mori suggests the use of phthalocyanine and the most basic structure would have hydrogen substitution, it would have been obvious to have used H as the radical groups as claimed.

Mori fails to mention that the cathode can be formed on a substrate.

Since the electrodes are generally positioned on the outer regions of a device with organic layers sandwiched between, it is common to form at least on or both electrodes on stationary substrates which would include the cathode being formed on a substrate.

The examiner takes the position that it is common in the art to form an electrode on a substrate and this would be inclusive of the cathode formed on a substrate.

10. **Regarding Claim 10**, Mori discloses an electroluminescent element that includes a hole injection layer (hole moving and donating) (column 4, lines 61-62).

Mori discloses that the electroluminescent element includes at least one hole moving and donating agent. Mori further discloses that the hole injection/transporting layer may be formed by vapor deposition and coating (column 29, lines 35-36).

The examiner interprets the term "coating" to be inclusive of a solution coating method that would include an aqueous coating.

Mori discloses that the injection/ transporting layer may be constitute two or more sub-layers (column 29, lines 44-47) corresponding to applicants' HIL1 and HIL2. Mori discloses that electrons and holes are injected from opposite electrodes (abstract). Mori fails to mention that the HIL2 is applied between HIL1 and the second electrode.

Since it is commonly known in the electroluminescent art that the anode injects holes into the adjacent organic layer and the cathode inject electrons into the adjacent organic layer, the routine optimization of the device efficiency especially in terms of lower the driving/running voltage requirements and optimizing the luminescence output is often achieved by testing the device performance under various organic layer configurations which would include the claimed layer configuration.

The examiner takes the position that the sub- layers (HIL 1 and 2) of Mori are positioned next to each other adjacent to the second electrode and in the course of optimization of hole injection one would vary the location of both layers to optimize the electroluminescent element performance that would include HIL2 applied between HIL1 and the second electrode.

11. **Regarding Claims 14-16**, Mori discloses an electroluminescent element that includes a hole injection layer (hole moving and donating) (column 4, lines 61-62).

Art Unit: 1794

Mori discloses that the electroluminescent element includes at least one hole moving and donating agent. Mori further discloses that the hole injection/ transporting layer may be formed by vapor deposition and coating (column 29, lines 35-36).

The examiner interprets the term "coating" to be inclusive of a solution coating method that would include an aqueous coating (per claim 14-16).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GREGORY CLARK whose telephone number is (571)270-7087. The examiner can normally be reached on M-Th 7:00 AM to 5 PM Alternating Fri 7:30 AM to 4 PM and Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Tarazano can be reached on (571) 272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1794

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. Lawrence Tarazano/
Supervisory Patent Examiner, Art Unit 1794

GREGORY CLARK/GDC/
Examiner
Art Unit 1794